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Subject: Response to Comments on the Draft Final Quality Assurance Project Plan and Submittal of the final Quality Assurance Project Plan for the Yerington Mine Site

Please find attached the final Quality Assurance Project Plan for the Yerington Mine Site. Atlantic Richfield has revised the document pursuant to the comments received from the regulatory agencies on August 19, 2003, as reflected in the following response to comments. As requested in prior comments, the locations within the documents where revisions were made pursuant to a comment is noted in bracketed text within the response.

Introductory Comment

This review was based on information provided in the following documents: EPA Requirements for Quality Assurance Project Plans (QA/R-5, March 2001); Guidance for the Data Quality Objectives Process (EPA QA/G-4, August 2000); Laboratory Documentation Requirements for Data Evaluation (R9QA-004.1, March 2001); Documentation of Data Validation Requirements in Quality Assurance Project Plans, Field Sampling Plans, and Sampling and Analysis Plans (EPA Memorandum, January 14, 2000); Regional Interim Policy for Determination of Volatile Organic Compound (VOC) Concentrations in Soil and Solid Matrices (EPA Memorandum, June 23, 1999); a Response to Comments (RTC) memorandum prepared by Atlantic Richfield Company dated March 12, 2003; and a Quality Assurance (QA) Office memorandum dated January 15, 2003.

The RTC states that G-5 is "a guidance tool and is not required criteria for QAPPs." The RTC also states that G-5 "provides guidance on developing QAPPs that meet EPA specifications for non-EPA conducted projects." It is generally felt that R-5 and G-5 are

essentially the same document. The "requirements" presented in R-5 give an outline, while G-5 provides a more descriptive discussion of what is required in each element and defines the information that EPA considers important in generating data of known quality. It is EPA's position that the elements presented in these documents are required of all parties submitting QAPPs for EPA review and approval. While the format presented in R-5/G-5 is not required, the information specified therein is. (Please note that following the format presented in R-5/G-5 generally expedites the review process.) It is EPA's position that the elements presented in these documents are required of all parties submitting QAPPs for EPA review and approval.

Most of the comments have been adequately addressed. However, several concerns remain. The QAPP cannot be approved until these concerns are addressed. Throughout this report, comments included in the original EPA memorandum are presented in bold type, and evaluations of the responses appear in normal type.

Specific Comments

1A. [General] Most elements required by QA/R-5 are not included in the subject document. Three of the four QA/R-5 groups of elements are not addressed, including Group A, Project Management; Group C, Assessment and Oversight; and Group D, Data Validation and Usability. Some elements required in Group B, Data Generation and Acquisition, are addressed. However, not all elements in Group B are included in sufficient detail, such as Quality Control and Data Management. The Group B elements Sampling Process Design and Non-Direct Measurements are not addressed. It is recommended that the document be written to include all elements required in QA/R-5. If an element is not applicable, this should be stated in the QAPP.

Comment 1A. This comment has been partially addressed. It appears that most elements in Groups A, B and D have been at least cursorily addressed. Many elements have been deferred to site/event specific Work Plans, which is acceptable. (See Concern 1B below.) However, the following elements need to be included in the revised QAPP: A1, Title and Approval Sheet; A3, Distribution List; A4, Project/Task Organization.

Response to Comment 1A. In accordance with EPA QA/R-5, the following Group A elements have been added to the final QAPP: Title and Approval Page [page i]; Distribution List [page ii]; and Project/Task Organization [page iii].

1B. Data quality objectives (DQOs) are not addressed in the QAPP. It is recommended that the QAPP document the seven step DQO process as described in QA/G-4. If the DQO process is or will be described in an associated work plan, the QAPP should indicate this. The description of the DQO process should identify the participants in the DQO process and the primary decision maker.

Comment 1B. This comment has been adequately addressed. The RTC states that a reference to the DQOs has been added to the Introduction, which states that the Closure Scope of Work (SOW) has been attached as Appendix A to this QAPP and provides overall DQOs, background information for the site, and describes the proposed Work Plans for site investigations. The RTC also states that [site/event] specific DQOs will be discussed in the appropriate Work Plans. According to Section 1.4 of the Closure SOW and a conversation with Jim Sickles, the area/task specific Work Plans will be reviewed by the Region 9 QA Office and possibly other agencies as well.

Response to Comment 1B. Comment noted.

1C. The information provided in the QAPP concerning the analytical procedures is limited. It is recommended that the laboratory quality assurance plan, and/or appropriate SOPs, including QC acceptance criteria, be provided. Alternatively, Region 9 has prepared data quality indicator (DQI) tables for most common methods. These can be requested from the QA Office and, if necessary, modified to meet project needs.

Comment 1C. This comment has been partially addressed. DQI tables for some of the analyses listed in Tables 3-1 through 3-4 have been included as Appendix C. However, DQI tables for numerous analyses included on these tables, such as Method 300.0, SW846 Methods 8240 and 8270, to name a few, have not been included. Likewise, several DQI tables have been included (e.g., SW846 Method 8080/8081) for methods not listed on the tables.

Additionally, many of the detection limits listed in the tables are lower than those listed in the DQI tables. For example, on Table 3-2, the detection limit for aluminum, by Method 200.7, is 50 ug/L. The DQI table for Method 200.7 lists the detection limit as 200 ug/L.

The DQI tables and Tables 3-1 through 3-4 should be consistent. The DQI tables can be modified, as necessary, to meet project needs. A DQI table should be included for all requested analyses. If pre-written DQI tables are not available for a given analysis, they should be developed by the plan preparer. Alternatively, once laboratories are selected, the laboratories' quality assurance plans, and/or appropriate SOPs, can be provided for review instead of DQI tables.

It is also not clear how the DQI tables and laboratory QA Plan will be reconciled. As stated in Section 3.0, "prior to acceptance of an analytical laboratory to analyze samples, the laboratory must submit to Atlantic Richfield a comprehensive QC document outlining all methods, types of QC analyses and standards, and acceptance criteria for internal QC, as described in Section 3.6." DQI tables are designed to be prescriptive descriptions of

laboratory analytical requirements. Will prospective laboratories be required to meet the acceptance criteria specified in the DQI tables?

Response to Comment 1C. [Section 2.8, page 38], [Section 3.7, page 45], [Appendix C] The DQI tables in the final QAPP have been modified to include new tables where the pre-written DQI tables are not available for a particular analysis. The revised DQI tables have been compared with Tables 3-1 through 3-4, which have been revised to correspond with the DQI tables. The resulting QC requirements will be provided to the selected laboratory(s) as criteria for their preparation of a written comprehensive laboratory QC document. The QC document prepared by the laboratory will then be compared to the QC requirements, and any discrepancies will be reviewed and discussed with the laboratory.

2A. [Section 2.1.3, Sample Collection - Solids; Table 2-3, Summary of Sample Collection and Storage Parameters; Section 2.1.4, Sample Identification and Preservation - Solids] Section 2.1.3 describes the collection of samples for volatile organic compounds (VOCs) by capping the ends of core samples in tubes or compressing the sample into a container. Region 9 requires collection of samples for VOC analysis using a hermetically sealed sampling container, such as an EnCore sampler. Three discrete containers for each location are required. (Six discrete containers are required for samples designated for laboratory quality control.) A separate aliquot, if a glass jar or other appropriate container, should be provided for percent moisture determination. The Sample Preservation subsection of Section 2.1.4 should also be revised to address preservation of soil samples collected for VOC analysis.

Comment 2A. This comment has been partially addressed. The RTC states that Section 2.1.3 has been modified to include the EnCore sampling device as a possible method for surface and subsurface soil sampling. However, it is not clear if EnCores will be used. It is Regional policy that Method 5035A be followed for the sampling of VOCs. There are several sampling and preservation methods, with associated holding times, listed in this method. A rationale should be provided if Method 5035A will not be followed for the collection of volatile samples.

[Also note: The RTC states that The Region 9 Sampling and Analysis Plan (SAP) Guidance and Template, Version 2, Private Analytical Services Used, R9QA/002.1 does not seem applicable to the Yerington Mine project. This document was provided as an additional reference document. It contains information and "canned" language that may or may not be deemed useful or appropriate for the current project. It was not intended that it would be used "as is" for this project, as its primary use is for "one-time" or limited sampling events.]

Response to Comment 2A. [Section 2.1.3, page 5] Method 5035A will be used for collection and analysis of solids for VOC analysis where practical. It is uncertain which collection device(s) will work best for collection of solid materials at the Yerington Mine Site. The revised QAPP states that samples of the appropriate size for analysis will be collected using a metal or rigid plastic coring tool. The commercially available EnCore™, EasyDraw Syringe™ and Powerstop Handle™ and TerraCore TM sampler coring devices are examples of possible coring tools that are approved under Method 5035A. The appropriate coring tool will depend on the physical nature of the solid materials being collected (i.e., cohesiveness, density, grain size). Any coring tool used and any procedures for sample transfer and preservation will be in accordance with Method 5035A.

For example, gravelly soils will require a larger diameter opening in the coring tool and hard, dense solids may require a metal coring tool as opposed to a plastic coring tool. If a coring device is designed to be used as a storage container (as well as collection device), and is approved by the EPA as conforming with Method 5035A, then initial attempts will be to use such a device. However, if problems arise with this type of collection/storage (e.g., trapped air, inability to collect sample due to physical nature of solids, inadequate amount of sample), then cored samples will have to be transferred from the selected coring device to a VOA vial in accordance with collection and preservation methods in described in Method 5035A. All sampling activities, including a description of the coring tool used during site investigations, will be properly documented per the QAPP.

The 25-gram EnCore sampler appears appropriate for fine to coarse sand, the relatively small (2.3 cm) opening and short (3.3 cm) barrel length may preclude collection of larger, gravelly soils. Two EPA-certified Nevada laboratories indicate that soil samples received in the EnCore device have often been inadequate in terms of sample volume, indicating that air gaps may have been present. Additionally, comments from the EPA on the lack of validity for this device as a storage unit suggests that the EnCore sampler may not be the most appropriate overall choice as a means of collecting solids at the Yerington Mine Site. ("The EnCore sampler has not been thoroughly evaluated by EPA as a sample storage device. While preliminary results indicate that storage in the EnCore device may be appropriate for up to 48 hours, samples collected in this device should be transferred to the soil sample vials as soon as possible, or analyzed within 48 hours."; EPA Method 5035A).

2B. Table 2-3 specifies a 14 day holding time for soil samples collected for VOC analysis. Region 9 recommends a two day holding time unless the sample is frozen or preserved in methanol or with sodium bisulfate.

Comment 2B. Again, Regional policy advocates the use of Method 5035A, which expands on the holding times listed in Table 4-1, Chapter 4 of SW-846.

Response to Comment 2B. [Section 2.8, page 38] Table 2-3 has been revised to reflect two scenarios for VOC sample collection: one using three 40-mL VOA vials and preservative (sodium bisulfate or methanol), and one using a dedicated collection/storage device. The holding times are 14 days and 2 days, respectively.

3. [Table 2-1, Groundwater Field Parameters; Table 2-2, Surface Water Field Parameters] These tables specify Standard Methods 212 for temperature analysis. The Standard Method for temperature is Method 2550.

Comment 3. This comment has been satisfactorily addressed. The tables now list Standard Methods 2550 for temperature analysis.

Response to Comment 3. Comment noted.

4A. [Table 2-3, Summary of Sample Collection and Storage Parameters] The maximum holding time for semivolatile organic compound (SVOC) analysis in water should be revised from 14 days to 7 days.

This comment has been satisfactorily addressed. The table now shows a 7 day holding time for SVOC analysis.

Response to Comment 4A. Comment noted.

4B. The minimum filled container size and maximum holding times for VOCs in soil should be revised per Comment 2A, above.

Comment 4B. This comment has not been addressed.

Response to Comment 4B. [Section 2.8, page 38] Table 2-3 has been revised to reflect two scenarios for VOC sample collection: one using three 40-mL VOA vials and preservative (sodium bisulfate or methanol), and one using a dedicated collection/storage device. The holding times are 14 days and 2 days, respectively.

4C. The footnote for holding time for metals analyses indicate a 24 day holding time for chromium VI. The holding time for hexavalent chromium should be revised to 24 hours. In addition, the sample collected for chromium VI should not be acidified as indicated in Table 2-3.

Comment 4C. This comment has been satisfactorily addressed. The footnote has been revised to show a 24-hour holding time and no acidification for chromium VI.

Response to Comment 4C. Comment noted.

5. [Section 3.0, Laboratory Methods and Procedures] Section 3.0 states the laboratory monitors precision and accuracy through analysis of matrix spike (MS), matrix spike duplicate (MSD), and blank analyses. The criteria for these quality control (QC) samples should be documented in the QAPP. The QAPP should also provide acceptance criteria for initial calibrations, second source calibration checks, and laboratory control samples (LCSs).

Comment 5. This comment is partially addressed. Section 3.0 states that "prior to acceptance of an analytical laboratory to analyze samples, the laboratory must submit to Atlantic Richfield a comprehensive QC document outlining all methods, types of QC analyses and standards, and acceptance criteria for internal QC, as described in Section 3.6. After acceptance, this comprehensive QC document will be added to the QAPP as an appendix." It is unclear from this statement if the laboratory documents will be submitted to the Region 9 QA Office for review. This should be clarified.

This section also states that "available EPA Region 9 data quality indicator tables have been attached to this QAPP as Appendix C as a supplemental reference for assisting in review of laboratory analytical methods." The use of the DQI tables should be clarified, especially given the inconsistencies noted in Concern 1C above.

Response to Comment 5. Please see response to Comment 1C. [Section 3.0, page 40] The initial and subsequent comments are unclear on whether the agencies wish to receive the laboratory QC document. Therefore, the following text has been added: "Upon request from the agencies, the laboratory QC document will be provided".

6A. [Section 3.1, Soil and Sediment Analysis; Section 3.2, Ground and Surface Water Analysis; Section 3.3, Air Analyses] A number of agricultural chemistry samples will be submitted. It is recommended that the specific analytical methods and sources for these methods be identified.

Comment 6A. Only Section 3.1 mentions the analyses of "agricultural chemistry" samples. Table 3-1 lists the analyses that are considered as agricultural chemistry analyses. This comment has been satisfactorily addressed.

Response to Comment 6A. Comment noted.

6B. VOCs are not discussed in Sections 3.1 or 3.3, although VOCs are listed in Tables 3-1 and 3-4. It is recommended that all analyses that may be used be identified in Sections 3.1, 3.2, and 3.3.

Comment 6B. This comment has been satisfactorily addressed. VOCs have been added to Section 3.1 and deleted from Table 3-4 (as they are not expected to be part of the air analyses).

Response to Comment 6B. Comment noted.

7A. [Table 3-1, Laboratory Methods and Detection Limits for Soil and Sediment Analyses; Table 3-2, Laboratory Methods and Detection Limits for Groundwater Analyses; Table 3-3, Laboratory Methods and Detection Limits for Surface Water Analyses; Table 3-4, Laboratory Methods and Detection Limits for Air Analyses] Tables 3-1 through 3-4 provide detection limits. It is recommended that action levels be provided so proposed detection limits can be evaluated in terms of project requirements.

Comment 7A. The RTC states that "Atlantic Richfield believes that a description of action levels for the analytes listed in the QAPP would be inappropriate for this type of document. As appropriate, these may be addressed in the Final Permanent Closure Plan (FPCP)." It is acknowledged that the action levels determined for the FPCP may or may not be the same as those used to determine cleanup levels. However, it is the reviewer's opinion that a discussion of action levels at this time is not only appropriate, but necessary. Determination of action levels appropriate for the land use (in this case, for example, Region IX Industrial Preliminary Remediation Goals (PRGs)) will affect the selection of analytical methods. In addition, if the selected action levels are below the method detection limits, a discussion of how this will be resolved should be provided. If action levels are not provided, what will the analytical data be compared to in order to determine if additional sampling or site clean up is required?

Response to Comment 7A. [Section 3.7, page 45] Atlantic Richfield maintains that it is inappropriate to describe "action levels" (which typically equate to "cleanup levels") prior to the collection of data that would allow an evaluation of risks, and the development of background concentration ranges. According to the EPA website: "PRGs are not de facto cleanup standards and should not be applied as such. However, they could be used to establish final cleanup levels for a site after a proper evaluation takes place. Chemical concentrations above the PRG would not automatically trigger a response action. However, exceeding a PRG suggests that further evaluation of the potential risks that may be posed by site contaminants is appropriate. The PRGs contained in the PRG table are generic; that is, they are calculated without site-specific information. They may be re-calculated using site-specific data. Region 9 PRGs should be viewed as Agency guidelines, not legally enforceable standards."
[EPA website:www.epa.gov/region09/waste/sfund/prg/faq.htm]

However, to provide some level of comfort that the method detection limits (MDL) are adequate, we have included the list of "Analytical Trigger Levels" from the Process

Areas Work Plan. A comparison of MDLs to the analytical trigger levels is added in the Work Plan text and a discussion is provided where any MDLs are higher than the analytical trigger level.

7B. Tables 3-2 and 3-3 indicate total and dissolved analyses will be performed for all inorganic analyses. However, as indicated in Table 2-3, only samples collected for dissolved metals will be filtered. Tables 3-2 and 3-3 should be clarified.

Comment 7B. This comment has not been satisfactorily addressed. The RTC states that samples for total metals analysis will be unfiltered and dissolved metals analyses will be filtered as noted in Table 2-3. However, Tables 3-2 and 3-3 list several other analyses as both total and dissolved under the "Phase" column. Analyses such as alkalinity, hardness, anions (by Method 300.0), pH, temperature, total dissolved solids (TDS), and suspended solids are not normally filtered. In some cases, filtering is part of the method preparation, such as for TDS analysis, but this is not considered as a separate "dissolved" sample.

Response to Comment 7B. [Section 3.7, page 47] Tables 3-2 and 3-3 have been revised to reflect the above comment. "Dissolved" has been eliminated from the "Phase" column for alkalinity, hardness, pH, temperature, TSS, TDS, and turbidity.

7C. The footnote to Table 3-4 incorrectly defines ppm-r as parts per million by volume and XRF as x-ray fractionalization. These definitions should be corrected to ppm-v and x-ray fluorescence, respectively.

Comment 7C. This comment has been satisfactorily addressed. The footnote has been revised appropriately.

Response to Comment 7C. Comment noted.

7D. Note that the column which identifies the parameter or analyte in Table 3-4 also attributes ICP-MS or ICP-OES to the metals. However, the method column specifies XRF. This inconsistency should be resolved. In addition, Table 3-4 specifies TO-14/15 for the analysis of vanadium and zinc. However, TO-14 and TO-15 are organic analytical methods. The table should be corrected.

The table has been revised. The parameter/analyte column no longer includes methods and the methods for vanadium and zinc have been corrected to the XRF method. This comment has been satisfactorily addressed.

Response to Comment 7D. Comment noted.

8. [Section 4.5, Sample Traffic Report, Chain-of-Custody, and QA/QC Summaries] The information to be included on the chain-of-custody should also identify any preservative added and identify the sample(s) designated for laboratory QC.

Comment 8. This comment has been partially addressed. The method of sample preservation has been added to the list. The RTC states that identification of QA samples, such as duplicates and blanks, should not be done. This is true for field duplicates and field blanks, which are sent "blind" to the laboratory. However, the laboratory QC samples referred to above are samples such as matrix spike (MS) and matrix spike duplicate (MSD) samples, which should be made known to the laboratory by identifying them as such on the chain-of-custody form. Sample locations for laboratory QC samples should be selected from locations where moderate levels of contamination are expected.

Response to Comment 8. [Section 4.5, page 54] The final QAPP has been revised to reflect the above comment. Text has been added that requires samples intended for matrix spike and matrix spike duplicates to be indicated as such on the chain-of-custody.

If you have any questions regarding the revised document or the responses to comments, please contact me at 1-406-782-9964 ext. 430.

Sincerely,

Dave McCarthy
Project Manager